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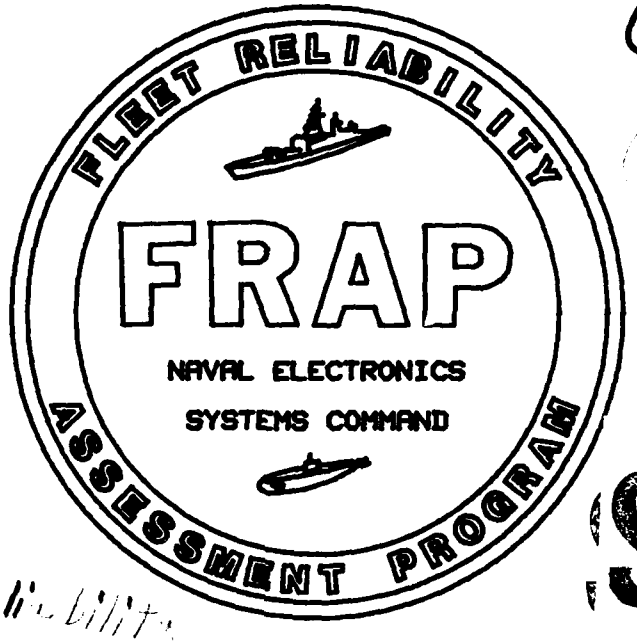

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EQUIPMENT REPORT

ON-143(V)5/USQ.

NAVAL WEAPONS SUPPORT CENTER

CRANE, INDIANA

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The report contains a reliability, maintainability and availability assessment of ON-143 shipboard data collected for approximately ten submarines for a period of nine months. The estimated MTBF was 4158 hours at a [illegible]

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VOLUME 2D ON-143(V)5/USQ

EQUIPMENT REPORT

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SECTION I - RESULTS

1-1 RESULTS SUMMARY

Between July 1978 and June 1979 FRAP collected data on the ON-143(V)5/USQ Interconnecting Group systems installed aboard 12 Fleet ships. A total of 16,173 operating hours were accumulated during which 1 failure was reported. This figure places the observed equipment MTBF at 16,173 hours. At the 90% confidence level, the true MTBF is not greater than 153,502 or less than 4158 hours. While no formal specifications exist for the system, it is the judgement of FRAP that the ON-143(V)5/USQ meets or exceeds minimum acceptable reliability requirements. See Table 1-1 for a summary of RMA results.

1-1.1 HARDWARE PROBLEMS

No chronic hardware reliability problem was discovered during the sampling period.

1-1.2 SOFTWARE PROBLEMS

No gross software problem manifested itself during the sampling period. There was, however, a firmware problem encountered which is a baud rate difference between the ON-143(V) and the VOCODER when powering up the ON-143(V) in the VOICE mode. Voice communications cannot be accomplished until the ON-143(V) stable base clock is reset to the proper baud rate.

1-1.3 RECOMMENDATIONS

To effect a permanent solution to the firmware problem, it is recommended that the Submarine Satellite Information Exchange System (SSIXS) operating program be re-programmed to cause the stable base clock to initialize at the correct baud rate for voice communications.

SECTION II - ON-143(V) SYSTEM DESCRIPTION

2-1 GENERAL

The ON-143(V)5/USQ Interconnecting Group (IG), shown in Figure 2-1, is an electronic interface and control device within the AN/USQ-64(V)3 Communications Systems Control Central. The IG interfaces various equipments and provides sequence control for the Input/Output (I/O) devices, crypto, voice digitizer (AN/CV-3333/U), and the AN/WSC-3 Transceiver. The IG contains a microprocessor Central Processing Unit (CPU) with a Read Only Memory (ROM) that contains the Submarine Satellite Information Exchange System (SSIXS) operating program. The IG and the SSIXS operating program allow for message processing and storage, system diagnostic tests, and self tests. A TTY keyboard is the primary operator input and system control, and a TTY printer serves as the message printout device. Figure 2-2 shows a typical SSIXS SATCOM system to illustrate the IG and system relationship.

LEGEND

1. OPER = OPERATIONAL*
2. EQUIP = EQUIPMENT*
3. PARTS = PARTS REPLACEMENT *

TABLE 2-4 . DATA SUMMARY FOR ON-143(V)5 .

PARAMETER	OPER	EQUIP	PARTS
OPERATIONAL			
Calendar Hours	60,792	60,792	60,792
Operating Hours	16,173	16,173	16,173
Duty Cycle	0.266	0.266	0.266
Sample Size	12	12	12
RELIABILITY			
Number of Failures	1	1	1
Time Between Failures-Mean	16,173	16,173	16,173
Time Between Failures-Median	11,210	11,210	11,210
Distribution	---	---	---
MAINTAINABILITY			
Total Repair Time	3	3	3
Number of Repairs	1	1	1
Time to Repair-Mean	3	3	3
Time to Repair-Median	---	---	---
Distribution	---	---	---
Total Down Time	72	72	72
Repairs (or Maint. Act.)	1	1	1
Down Time-Mean	72	72	72
Down Time-Median	---	---	---
Distribution	---	---	---
AVAILABILITY			
Inherent	0.9998	0.9998	0.9998
Observed-Mean	---	---	---
Observed-Median	---	---	---
Effective	0.9955	0.9955	0.9955

* Reference Volume 1, Paragraph 3-4
NOTE: All Time Units Are In Hours

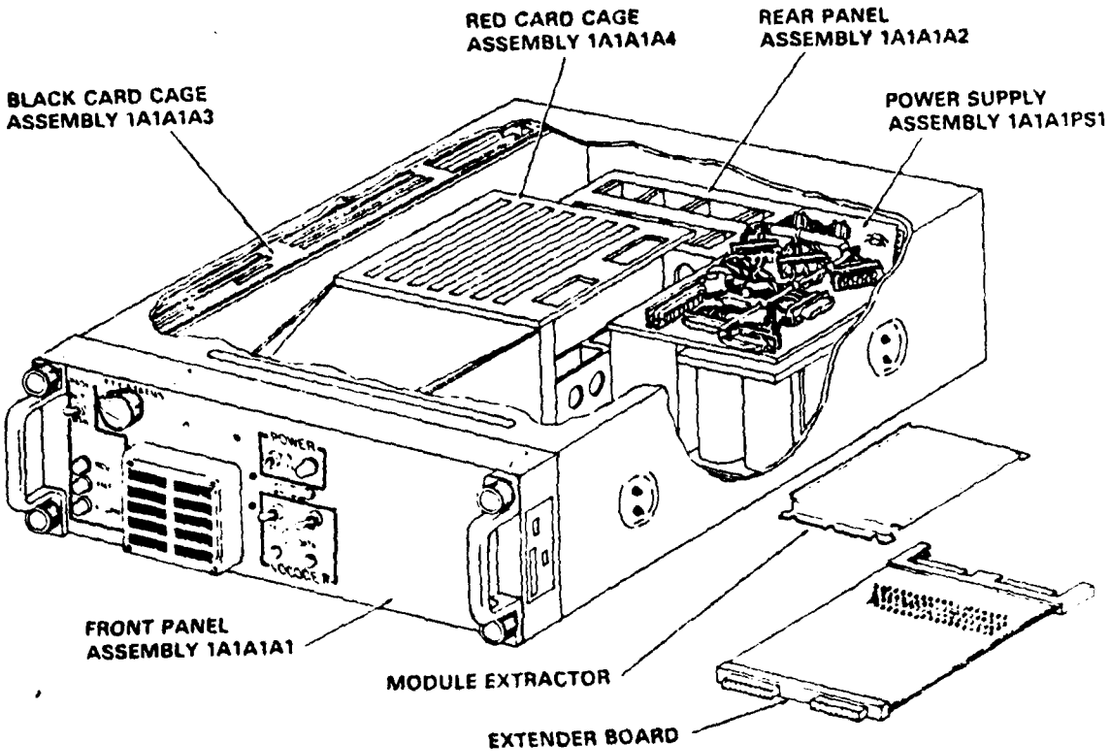


FIGURE 2-1

Interconnecting Group ON-143(V)5/USQ, Top Assembly View

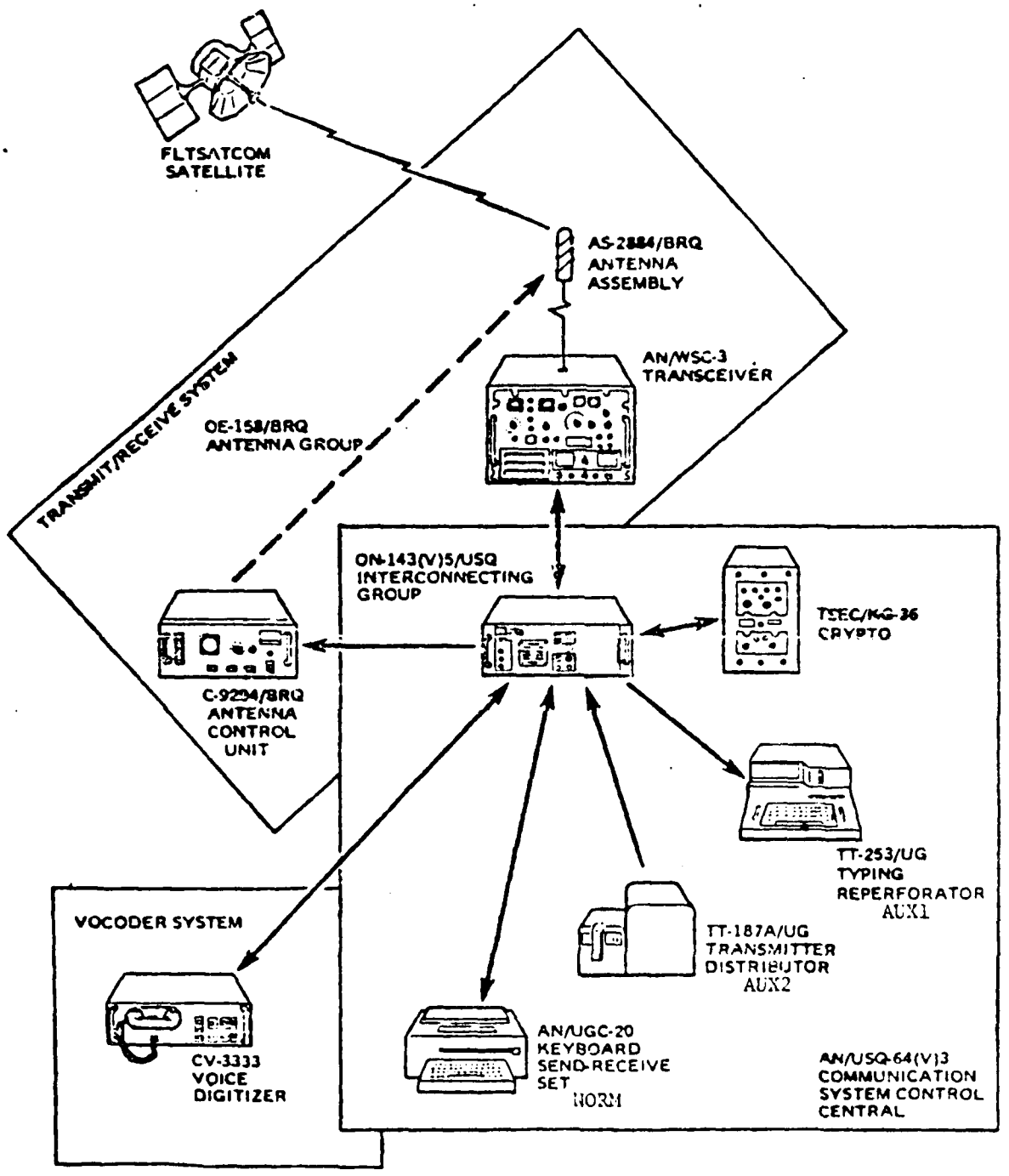


FIGURE 2-2

Interconnecting Group ON-143(V)5 and
SSIXS Equipment Relationship of Units.

2-2 MISSION DESCRIPTION

The IG performs six major system functions: Signal Interfacing, Sequencing of system equipments, Link Control, Message Processing, Vocoder Interface, and Monitoring for alarm conditions. The IG maintains physical and electrical isolation between Red (secure) system signals and Black (unsecure) system signals. Figures 2-3 and 2-4 illustrate the six major functions and the associated functional flow.

a. Signal Interfacing. To accommodate variation in system equipments, the IG provides signal routing options that can be selected during installation. Signals are selectively converted with respect to time or voltage levels in order to be compatible with the rest of the system.

b. Sequencing of System Equipments. Within the IG, circuit logic on the Red (secure) side provides for overall system control by means of a micrroprocessor Central Processing Unit and associated firmware. Under operator control, the CPU automatically generates and routes signals to properly sequence the configured system.

c. Link Control. This function exercises the protocol established to meet the operational needs of the Fleet submarine subscribers, with regard to system mode, the relative priorities of individual subscribers, and precedence of message categories and/or voice traffic.

d. Message Processing. The data, or message mode is the primary mode of operation for the SSIXS subscriber, however, the system can also operate in the coded voice mode. Message processing encompasses five subfunctions:

(1) Message Screening
(2) Message Storage
(3) Operator Interface
(4) Message Input
(5) Message Output

The subfunctions are accomplished by operator interface with the CPU and its firmware program, in conjunction with the ability of the IG to control link system equipments automatically.

e. Vocoder Interface. The operator can switch between the data and voice modes by means of switchlights on the front panel of the IG. When in the data mode, the subscriber operator may be informed by the shore of a desire to switch over to voice by means of special request messages which are printed out on the Teletype (TTY) printer. Similarly, the subscriber can initiate the request to the shore during a subscriber initiated exchange.

f. Monitoring and Alarm Indication. The IG performs an interface/display function in support of the system's vocoder unit. The IG also monitors the transceiver mode of operation and the crypto alarm signal.

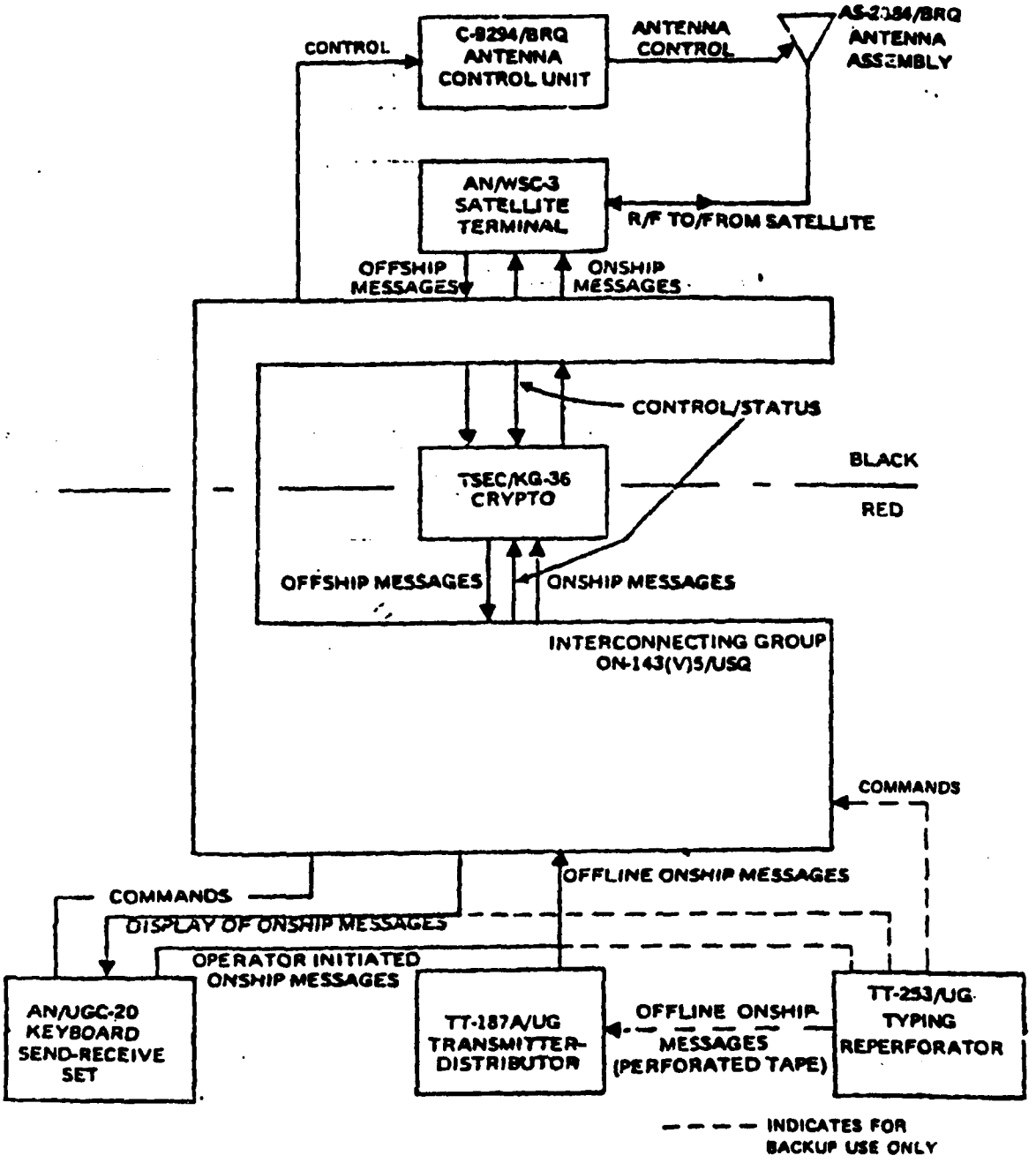


FIGURE 2-3

ON-143(V)5 Functional Flow Diagram

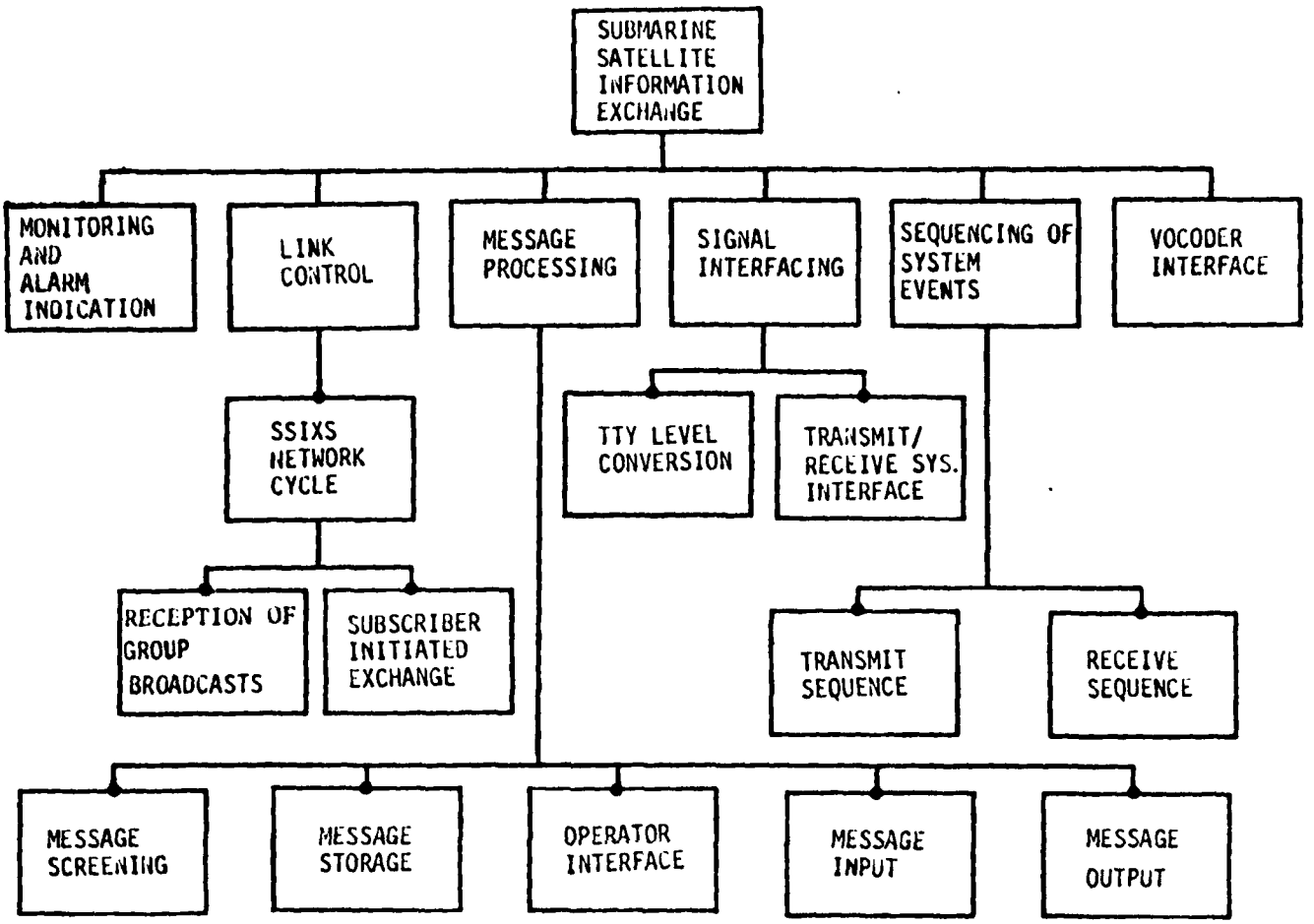


FIGURE 2-4

ON-143(V)5 System Functions

2-3 EQUIPMENT DESCRIPTION

System performance is the result of both hardware (electronic circuits) and firmware (processor) control and processing of a multitude of signals within the IG. Figure 2-5 is an IG Signal Function Block Diagram which depicts the signal flow of major signals among the circuit cards and to and from peripheral equipments attached to the IG.

The IG consists basically of two compartments. It processes both encrypted intelligence data and non-secure data in a compartment designated black card cage (non-secured), and processes non-encrypted intelligence data within a red card cage (secured). Circuit cards fall into three groups:

(1) processor cards
(2) vocoder cards
(3) black radio cards

Figure 2-6 lists the major assemblies.

2-3.1 Processor Group.

The Processor Group consists of the CPU, ROM, RAMs, I/O-1, I/O-6, and I/O-7 cards and is contained within the Red card cage. The group is a self-contained computer, less power supply, data entry and readout devices. The computer has a fixed program within the ROM card which causes it to operate as a dedicated processor. The cards communicate among each other by dedicated lines or by a common bus structure. The address selection is controlled by the CPU and is routed to all other processor cards on a common 16 line address line. Data is transferred among the cards on an eight line bi-directional data bus.

a. Central Processing Unit (CPU). The CPU card (1A1A42) used in the ON-143(V)5/USQ, consists of an 8080A microprocessor, a 20 MHz crystal oscillator with divide by 10 circuitry, tri-state bus drivers and receivers, a status latch and decode circuit.

b. Read Only Memory (ROM). The ROM module (1A1A38) consists of eight denot level erasable ROM chips, address recognition logic, bus timing logic, tri-state drivers/receivers, and four voltage regulators. The eight ROM chips represent 8192 8-bit words of read only storage and are used to store the SSIXS program.

c. Random Access Memory (RAM). There are three identical RAM cards (1A1A39, 40, 41) each containing 16 dynamic RAM chips, address recognition logic, read/write timing logic, refresh circuitry for the dynamic RAMs, and tri-state drivers/receivers. The 16 dynamic RAM chips represent 8192 8-bit words of random access memory. The ON-143(V)5 can operate with only one RAM card and/or with partially defective RAM cards in a degraded mode consisting of limited message buffer storage area and/or garbled characters.

d. Input/Output No. 1 (I/O-1). The I/O-1 circuit card (1A1A37) contains an automatic program start, an asynchronous receiver/transmitter, discrete Mil-Std-188C input/output lines, a real time clock, and an

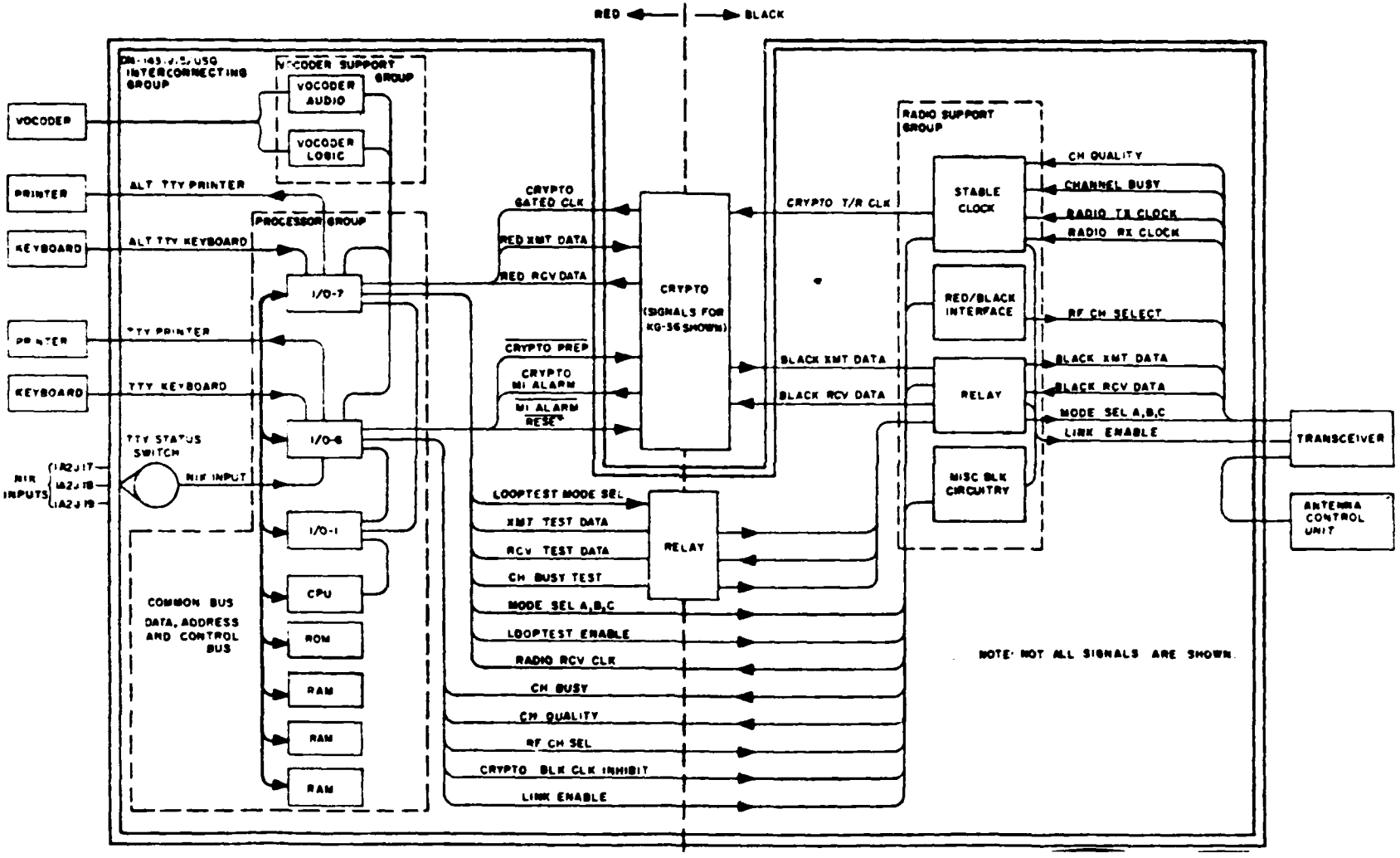


FIGURE 2-5

IG Signal Function Block Diagram

List of Major Assemblies

Reference Designation	Name
1	INTERCONNECTING GROUP ON-143(V)5/USQ, P/N 74E2N117
1A1	INTERCONNECTING GROUP ON-143(V)5/USQ, P/N 74E2N872
1A35	CIRCUIT CARD ASSY, Discrete Data, P/N 0008374
1A36	CIRCUIT CARD ASSY, I/O Serial Data, P/N 000838
1A37	CIRCUIT CARD ASSY, I/O Basic, P/N 0008134
1A38	CIRCUIT CARD ASSY, Read Only Memory, P/N 0008130
139	CIRCUIT CARD ASSY, Random Access Memory, P/N 0008126
1A40	CIRCUIT CARD ASSY, Random Access Memory, P/N 0008126
1A41	CIRCUIT CARD ASSY, Random Access Memory, P/N 0008126
1A42	CIRCUIT CARD ASSY, Processor Control, P/N 0008122
1A1A1	FRONT PANEL ASSY, P/N 74E2N848
1A1A1A2	REAR PANEL ASSY, P/N 74E2N259-4
1A1A1A3	CARD CAGE ASSY, (Black), P/N 74E2N228
1A1A1A4	CARD CAGE ASSY, (Red), P/N 74E2N232-3
1A1A1A13	CIRCUIT CARD ASSY, Secure Voice, P/N 74E2N384
1A1A1A14	CIRCUIT CARD ASSY, Secure Voice, P/N 74E2N388
1A1A1A16	CIRCUIT CARD ASSY, Interface Assy, P/N 74E2N900
1A1A1A17	CIRCUIT CARD ASSY, Stable Clock, P/N 74E2N356
1A1A1A18	CIRCUIT CARD ASSY, Relay, P/N 74E2N665
1A1A1A19	CIRCUIT CARD ASSY, Black Circuits, P/N 74E2N470
1A1A1PS1	POWER SUPPLY ASSY, P/N 74E2N845-2
1A1A1PS1A1	± 12 Vdc Regulator Module
1A1A1PS1A2	Dual +5 Vdc Regulator
1A1A1PS1A3	± 6.5 Vdc Regulator
1A1A1PS1A4	+5 Vdc ± 1% Regulator
1A1A1PS1A5	+130 Vdc Regulator
1A1A1PS1A7	Interconnect Board

FIGURE 2-6

interval timer.

e. Input/Output No. 6 (I/O-6). The I/O-6 circuit card (1A1A35) contains the control and status logic for the transmit and receive functions, level converters for TTY equipment interface, strap option headers that are wired to set data rates and interface various types of equipments, and an interrupt capability. Inputs and outputs to the common bus are via tri-state receivers/drivers.

f. Input/Output No. 7 (I/O-7). The I/O-7 circuit card (1A1A36) contains serial to parallel and parallel to serial converters for the synchronous data, control for the transmit and receive clock, loopback test logic, and high level teletype level converters. The transmit and receive clocks and the serial to parallel/parallel to serial converters have interrupt capability.

2-3.2 Vocoder Support Group.

Two vocoder support cards provide signals in support of vocoder operation. The two cards interface with each other, the vocoder peripheral unit, and primarily the I/O-6 card. Vocoder related data and controls are applied through the I/O card to the CPU for further processing.

a. Vocoder Logic Conversion Interface. The vocoder logic interface card (1A1A13) allows for data or voice selection.

b. Vocoder Audio Interface. The vocoder audio interface card (1A1A14) generates and introduces audio tones, dial tone, busy tone, and push-to-talk tone (PPT), onto the voice data signal to the vocoder.

2-3.3 Black Radio Support Group

The radio support group consists of the four cards in the Black Card Cage. The cards interface the radio signals to either the peripheral crypto unit or the processor group cards.

a. Stable Base Clock. The stable base clock card (1A1A17) provides a phase stable data clock to the receiving crypto during momentary fades or RF signal interruptions.

b. Relay Card. The relay card (1A1A18) provides multiple signal switching under the control of the red/black isolation relays, which are controlled from the red side.

c. Red/Black Interface Card. The red/black interface card (1A1A16) contains relays and optical isolators to provide isolation and coupling for signals passing between the red and black compartments.

d. Black Circuit Card. The black circuit card (1A1A19) is an alarm circuit card which detects loss of clock, and accepts external fault indications. The card actuates an indicator lamp to indicate a malfunction of the received radio signal or other indication of improper operating mode.

SECTION III - SPECIFICATIONS

No formal specifications are available for the ON-143(V) Interconnecting Group.

SECTION IV - PROBLEMS

4-1 HARDWARE

No chronic hardware problems were encountered during the sample period.

4-2 SOFTWARE

A Baud Rate problem has been encountered with the ON-143(V)5 system. SSIXS subscribers have been unable to establish voice mode communication initially following ON-143(V)5 power-up. The problem is the result of the ON-143(V)5 initializing itself in Voice mode at 4800 baud while the Vocoder is set to operate at 2400 baud. A temporary solution has been for the operator to reset the ON-143(V)5 stable base clock rate by switching the system to DATA mode and executing a RCV, XMT, or CLB command. A result of these commands is to cause the operating program to control the stable base clock rate in accordance with the baud rate strap options. If the strap options are set at 2400 baud for SSIXS traffic, the commands will cause the stable base clock to be reset to 2400 baud. The clock remains at 2400 baud when the system is switched back to Voice mode and therefore allows satisfactory voice mode communications. To effect a more permanent solution would require re-programming the SSIXS operating program to cause the stable base clock to initialize at 2400 baud following power-up.

SECTION V - CORRECTIVE ACTIONS

No corrective actions were taken. However, it is recommended that action be taken to correct the voice communications baud rate problem referred to in Section I.

SECTION VI - EQUIPMENT RELIABILITY MODEL

System reliability is defined as the probability of performing a specified function or mission under specified conditions for a specified time. Reliability models are word statements or block diagrams which represent the requirements for mission success. The FRAP equipment models are used to determine the achieved operational reliability and to assess the effect of ECPs and other corrective action upon system reliability. Maintenance Action Reports are compared against the model to determine if a reported failure results in a system failure, or if not a failure, then the degree of system degradation. In addition, the model is used in determining logistic support requirements.

Maintenance of Naval shipboard equipment is accomplished by replacement or repair of components at Organizational (O), Intermediate (I), or Depot (D) repair levels. Ships Maintenance and Material Management (3-M) normally collects organizational level repair data but not intermediate or depot level repair data. Using 3-M field data requires that the

lowest components of the model be the lowest level reported by 5-M, i.e., the O-level replaceable component. This O-level component can be a piece-part, printed circuit board, major assembly, or whatever is planned for the O-level maintenance concept.

Figure 6-1 presents the ON-143(V)5 IG (WRA 26) reliability model block diagram.

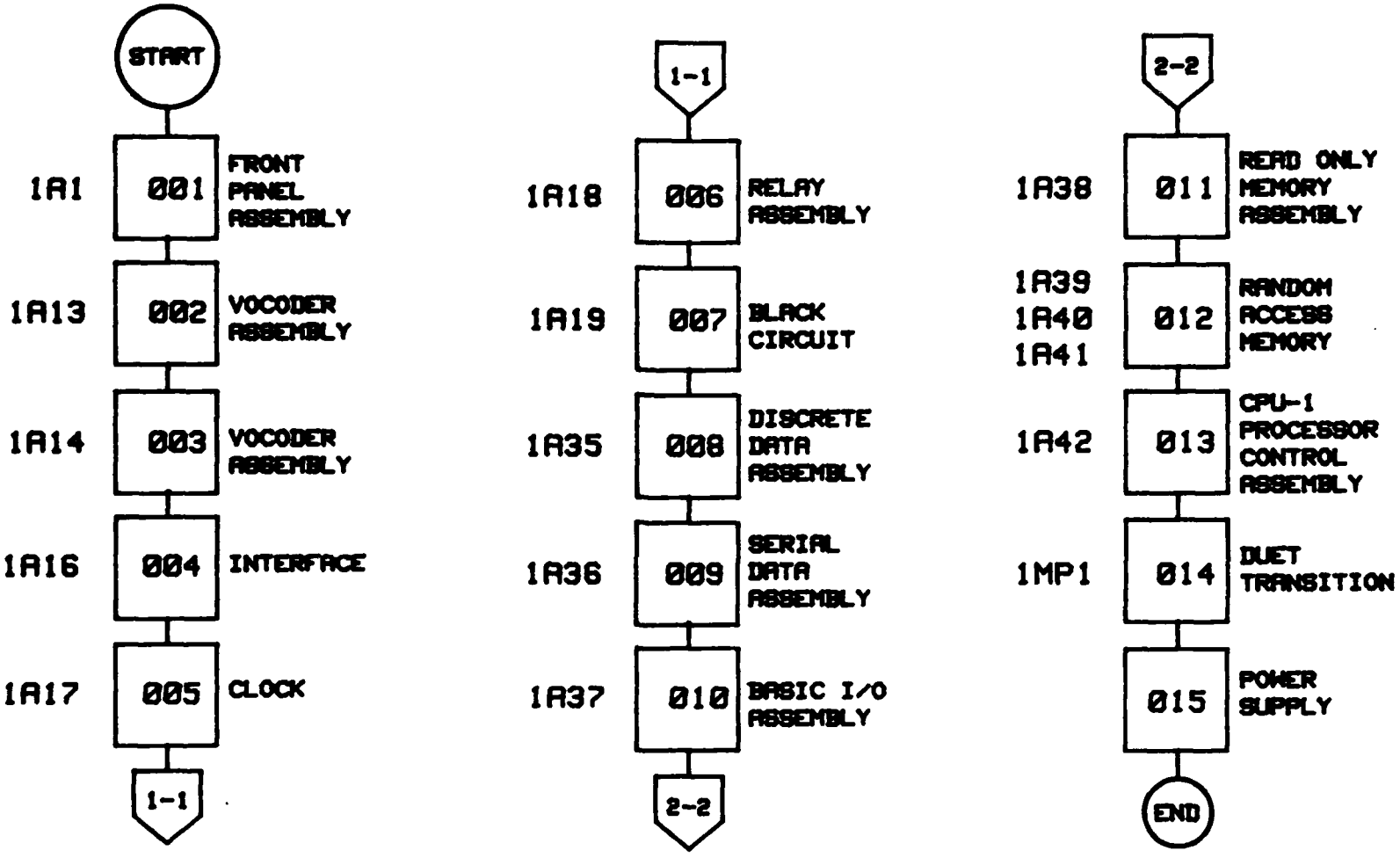


FIGURE 6-1

EQUIPMENT/O-Level Reliability Block Diagram for ON-143(V)5 [WRA 26]

SECTION VII - ANALYSES

7-1 RELIABILITY

The following is the computer analysis of the observed operational reliability of the ON-143(v)5. Only the reliability analysis was performed since insufficient failures were observed to justify maintainability and availability analyses.

FLEET RELIABILITY ASSESSMENT DATA

SYSTEM	SHIPNAME	DATE	FTM	FAILURE TYPE	OPERATE	FAILURE TIME	DUTY	WRA	OL1	OL2	OL3
ON-143	DRUM	8286	3.	CENSORED	0.	0.	0.000	0	0	0	0
ON-143	DRUM	8317	52.	CENSORED	49.	49.	.066	0	0	0	0
ON-143	DRUM	8350	205.	CENSORED	202.	202.	.132	0	0	0	0
ON-143	DRUM	9013	262.	CENSORED	259.	259.	.117	0	0	0	0
ON-143	DRUM	9044	273.	CENSORED	270.	270.	.091	0	0	0	0
ON-143	DRUM	9072	285.	CENSORED	282.	282.	.078	0	0	0	0
ON-143	DRUM	9103	287.	CENSORED	284.	284.	.065	0	0	0	0
ON-143	DRUM	9124	336.	FINAL	333.	333.	.068	0	0	0	0
ON-143	FLASHER	8332	1.	INITIAL	0.	0.	0.000	0	0	0	0
ON-143	FLASHER	8362	506.	CENSORED	505.	505.	.701	0	0	0	0
ON-143	FLASHER	9025	607.	CENSORED	606.	606.	.435	0	0	0	0
ON-143	FLASHER	9060	613.	CENSORED	612.	612.	.274	0	0	0	0
ON-143	FLASHER	9090	926.	CENSORED	925.	925.	.313	0	0	0	0
ON-143	FLASHER	9124	1029.	FINAL	1028.	1028.	.273	0	0	0	0
ON-143	GUARDFISH	8145	0.	INITIAL	0.	0.	0.000	0	0	0	0
ON-143	GUARDFISH	9078	2960.	CENSORED	2960.	2960.	.414	0	0	0	0
ON-143	GUARDFISH	9081	2960.	FINAL	2960.	2960.	.410	0	0	0	0
ON-143	GURNARD	8235	1.	INITIAL	0.	0.	0.000	0	0	0	0
ON-143	GURNARD	8265	207.	CENSORED	206.	206.	.286	0	0	0	0
ON-143	GURNARD	8275	484.	CENSORED	483.	483.	.503	0	0	0	0
ON-143	GURNARD	8335	693.	CENSORED	692.	692.	.288	0	0	0	0
ON-143	GURNARD	9102	2555.	FINAL	2554.	2554.	.459	0	0	0	0
ON-143	HADDO	8194	0.	INITIAL	0.	0.	0.000	0	0	0	0
ON-143	HAWKBILL	8158	0.	INITIAL	0.	0.	0.000	0	0	0	0
ON-143	HAWKBILL	8286	1881.	CENSORED	1881.	1881.	.612	0	0	0	0
ON-143	HAWKBILL	8304	2073.	CENSORED	2073.	2073.	.592	0	0	0	0
ON-143	HAWKBILL	8334	2116.	CENSORED	2116.	2116.	.501	0	0	0	0
ON-143	HAWKBILL	8365	2152.	CENSORED	2152.	2152.	.433	0	0	0	0
ON-143	HAWKBILL	9031	2152.	CENSORED	2152.	2152.	.377	0	0	0	0
ON-143	HAWKBILL	9059	2318.	CENSORED	2318.	2318.	.363	0	0	0	0
ON-143	HAWKBILL	9086	2341.	CENSORED	2341.	2341.	.333	0	0	0	0
ON-143	HAWKBILL	9141	2528.	FINAL	2528.	2528.	.303	0	0	0	0
ON-143	JACK	8207	0.	INITIAL	0.	0.	0.000	0	0	0	0
ON-143	JACK	8237	2.	CENSORED	2.	2.	.003	0	0	0	0
ON-143	JACK	8264	3.	CENSORED	3.	3.	.002	0	0	0	0
ON-143	JACK	8296	3.	CENSORED	3.	3.	.001	0	0	0	0
ON-143	JACK	8326	3.	CENSORED	3.	3.	.001	0	0	0	0
ON-143	JACK	8360	3.	CENSORED	3.	3.	.001	0	0	0	0
ON-143	JACK	9053	69.	CENSORED	69.	69.	.014	0	0	0	0
ON-143	POGY	8244	0.	INITIAL	0.	0.	0.000	0	0	0	0
ON-143	POLLACK	8258	24.	INITIAL	0.	0.	0.000	0	0	0	0
ON-143	POLLACK	8275	158.	CENSORED	134.	134.	.328	0	0	0	0
ON-143	POLLACK	8305	480.	CENSORED	456.	456.	.404	0	0	0	0
ON-143	POLLACK	9070	779.	CENSORED	755.	755.	.178	0	0	0	0
ON-143	QUEENFISH	8157	0.	INITIAL	0.	0.	0.000	0	0	0	0
ON-143	QUEENFISH	8307	588.	CENSORED	588.	588.	.163	0	0	0	0
ON-143	QUEENFISH	9002	588.	CENSORED	588.	588.	.117	0	0	0	0
ON-143	QUEENFISH	9037	885.	CENSORED	885.	885.	.151	0	0	0	0
ON-143	QUEENFISH	9060	885.	CENSORED	885.	885.	.138	0	0	0	0
ON-143	QUEENFISH	9130	946.	FINAL	946.	946.	.117	0	0	0	0

FLEET RELIABILITY ASSESSMENT DATA

SYSTEM	SHIPNAME	DATE	FTM	FAILURE TYPE	OPERATE	FAILURE TIME	DUTY	WRA	OL1	OL2	OL3
ON-143	SEADRAGON	8180	0.	INITIAL	0.	0.	0.000	0	0	0	0
ON-143	SEADRAGON	8199	156.	DEFFERED	156.	156.	.342	26	12	0	0
ON-143	SEADRAGON	8220	340.	CENSORED	340.	184.	.354	0	0	0	0
ON-143	SEADRAGON	8237	427.	CENSORED	427.	271.	.312	0	0	0	0
ON-143	SEADRAGON	8265	517.	CENSORED	517.	361.	.253	0	0	0	0
ON-143	SEADRAGON	8298	1018.	CENSORED	1018.	862.	.359	0	0	0	0
ON-143	SEADRAGON	8334	1770.	CENSORED	1770.	1614.	.479	0	0	0	0
ON-143	SEADRAGON	8361	2225.	CENSORED	2225.	2069.	.512	0	0	0	0
ON-143	SEADRAGON	9090	3450.	CENSORED	3450.	3294.	.523	0	0	0	0
ON-143	SEADRAGON	9107	3746.	CENSORED	3746.	3590.	.535	0	0	0	0
ON-143	SEADRAGON	9134	3843.	FINAL	3843.	3687.	.502	0	0	0	0
ON-143	TINOSA	8207	0.	INITIAL	0.	0.	0.000	0	0	0	0
ON-143	TINOSA	8274	0.	CENSORED	0.	0.	0.000	0	0	0	0
ON-143	TINOSA	8303	201.	CENSORED	201.	201.	.087	0	0	0	0
ON-143	TINOSA	8337	557.	CENSORED	557.	557.	.179	0	0	0	0
ON-143	TINOSA	8363	668.	CENSORED	668.	668.	.178	0	0	0	0
ON-143	TINOSA	9028	899.	CENSORED	899.	899.	.201	0	0	0	0
ON-143	TINOSA	9089	1157.	FINAL	1157.	1157.	.195	0	0	0	0

R E L I A B I L I T Y

ON-143 SYSTEM LEVEL

REMAINING SYS. CAP.	TIME TO FAIL	NO. FAILURES	NO. CENSORED
	69.0		1.
75.	156.0	1.	
	333.0		1.
	755.0		1.
	946.0		1.
	1028.0		1.
	1157.0		1.
	2528.0		1.
	2554.0		1.
	2960.0		1.
	3687.0		1.

EQUIPMENT OPERATING HOURS (O.H.) = 16173.0 CALENDAR HOURS(C.H.) =. 60792.0 DUTY CYCLE (O.H./C.H.) = .266

NUMBER OF FAILURES = 1. OBSERVED FAILURE RATE/O.H. = .61831E-04

LESS THAN FOUR FAILURES THE EXPONENTIAL DISTRIBUTION IS ASSUMED

FOR THE ASSUMED DISTRIBUTION

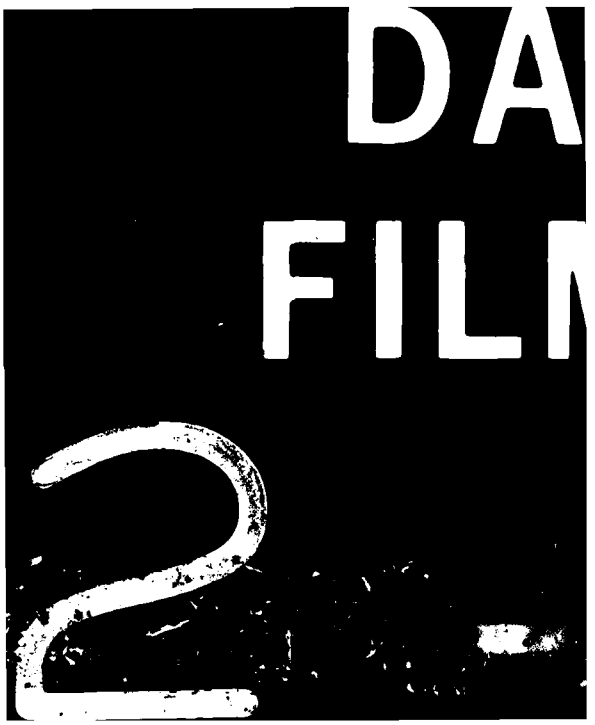
EST. MEAN = 16173.000. EST. MEDIAN = 11210.269. 90 PER CENT LCL FOR MEAN = 4157.9. 90 PER CENT UCL FOR MEAN = 153502.278

90 PERCENT UCL 153502.28 IS GREATER THAN 1500.00 HOURS. THEREFORE THE EQUIPMENT MEETS THE SPECIFICATIONS

R E L I A B I L I T Y

ON-143 O-LEVEL SUMMARY

WRA	O-LEVEL BLOCK NO.	O-LEVEL NOMENCLATURE	NUMBER FAILURES	LOWER 90 CONF LIM	MEAN	UPPER 90 CONF LIM	SPEC MTBF	OBSERVED FAILURE TIMES LOW	OBSERVED FAILURE TIMES HIGH	RELIAB PROBLEM
26	12	RANDOM ACCESS MEMORY (RAM)	1.	4157.88	16173.00	153502.28	90909.00	156.00	156.00	NO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